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10/510,136	10/04/2004	Yukio Kadowaki	2271/73116	6312

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EXAMINER	
ABDELNOUR, AHMED F	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/510,136	KADOWAKI, YUKIO	
	Examiner	Art Unit	
	Farras Abdelnour	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 October 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :October 23, 2006; and October 4, 2004.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 2002-128682, filed on April 4, 2002.

Drawings

2. Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 12, 13, and 15-18 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which

was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 12, 13, and 15-18 lack explanation of encoding image/audio information by portion. The specification is silent as to the nature and meaning of encoding by portion. For the purpose of application prosecution, "encoding by portion" is interpreted as encoding by bit plane (portions of image).

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 14, 17, and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 14, 17, and 18 define a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed computer programs can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 5-7, 10, 12-14, and 18 rejected under 35 U.S.C. 102(b) as being anticipated by D. Taubman (Taubman, D., "High performance scalable image compression with EBCOT," *Image Processing, IEEE Transactions on*, vol.9, no.7, pp.1158-1170, Jul 2000. Provided by applicant).

Regarding Claim 1, Taubman discloses a method of processing image information ("This paper describes a novel image compression algorithm," page 1158, column 1), comprising the steps of:

encoding said image information by a bit plane ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

generating an index parameter indexing degradation of said image information caused by truncation of one or more bit planes based on said image information ("The bit-stream associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

compressing said image information by truncating the bit planes ("it is possible to independently compress relative small code-blocks (say 32x32 or 64x64 samples each) with an embedded bit-stream consisting of a large number of truncation points," page 1159, column 1); and

attaching said index parameter to the encoded image information ("The rates, R_i and slopes, S_i, for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the bit planes to be truncated are determined based on the attached index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 5, Taubman discloses the method as claimed in claim I, further comprising the step of obtaining an amount of distortion of said image information caused by the truncation of the bit planes based on said image information before encoding, wherein said index parameter contains the obtained amount of distortion ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 6, Taubman discloses the method as claimed in claim 5, further comprising the step of obtaining a slope parameter of said distortion of said image information caused by the truncation of the bit planes based on said image information before encoding, wherein said index parameter contains the obtained amount of distortion and the obtained slope parameter ("The rates, R_i and slopes, S_i, for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1).

Regarding Claim 7, Taubman discloses the method as claimed in claim 1, wherein said image information is compressed with JPEG 2000 ("the EBCOT algorithm was adopted for inclusion in the evolving JPEG2000 image compression standard," page 1160, column 1).

Regarding Claim 10, Taubman discloses an image processing apparatus ("This paper describes a novel image compression algorithm," page 1158, column 1. Also consult Section V, page 1166, for numerical results. Numerical results require apparatus implementation), comprising:

an encoding unit that encodes image information by a bit plane ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

an index generating unit that generates index parameter indexing degradation of said image information caused by truncation of one or more bit planes based on said image information ("The bit-stream associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

a compressing unit that compresses said image information by truncating the bit planes ("it is possible to independently compress relative small code-blocks (say 32x32 or 64x64 samples each) with an embedded bit-stream consisting of a large number of truncation points," page 1159, column 1); and

an index attaching unit that attaches said index parameter to the encoded image information ("The rates, R_i and slopes, S_i , for each j_k in N_i, are kept in a compact form

along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the bit planes to be truncated are determined based on the attached index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 12, Taubman discloses a method of processing image information ("This paper describes a novel image compression algorithm," page 1158, column 1), comprising the steps of:

encoding said image information by a portion ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

generating index parameter indexing degradation of said image information caused by deletion of one or more portions of said image information ("The bit-stream associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

compressing said image information by deleting the portions ("it is possible to independently compress relative small code-blocks (say 32x32 or 64x64 samples each) with an embedded bit-stream consisting of a large number of truncation points," page 1159, column 1); and

attaching said index parameter to the encoded image information ("The rates, R_i and slopes, S_i , for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the portions to be deleted are determined based on said index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 13, Taubman discloses an image processing apparatus ("This paper describes a novel image compression algorithm," page 1158, column 1. Also consult Section V, page 1166, for numerical results. Numerical results require apparatus implementation), comprising:

an encoding unit that encodes image information by a portion ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

an index generating unit that generates index parameter indexing degradation of said image information caused by deletion of one or more portions of said image information ("The bit-stream associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

a compressing unit that compresses said image information by deleting the portions ("it is possible to independently compress relative small code-blocks (say 32x32 or 64x64 samples each); and

an index attaching unit that attaches said index parameter to the encoded image information ("The rates, R_i and slopes, S_i , for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the portions to be deleted are determined based on said index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 14, Taubman discloses a computer program that causes a computer to process image information ("This paper describes a novel image compression algorithm," page 1158, column 1. Also consult Section V, page 1166, for numerical results. Numerical results require computer program implementation), comprising the steps of:

encoding said image information by a bit plane ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

generating index parameter indexing degradation of said image information caused by truncation of one or more bit planes based on said image information ("The bit-stream associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

compressing said image information by truncating the bit planes (say 32x32 or 64x64 samples each) with an embedded bit-stream consisting of a large number of truncation points," page 1159, column 1); and

attaching said index parameter to the encoded image information ("The rates, R_i and slopes, S_i , for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the bit planes to be truncated are determined based on the attached index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

Regarding Claim 18, Taubman discloses a computer program that causes a computer to process image information ("This paper describes a novel image compression algorithm," page 1158, column 1. Also consult Section V, page 1166, for numerical results. Numerical results require computer program implementation), comprising the steps of:

encoding said image information by a portion ("The coder is essentially a bit-plane coder, using similar techniques to those of the LZC algorithm [16]," page 1161, column 1);

generating index parameter indexing degradation of said image information caused by deletion of one or more portions of said image information ("The bit-stream

associated with B_i may be independently truncated to any of a collection of different lengths," page 1159, column 1);

compressing said image information by deleting the portions ("it is possible to independently compress relative small code-blocks (say 32x32 or 64x64 samples each); and

attaching said index parameter to the encoded image information ("The rates, R_i and slopes, S_i , for each j_k in N_i, are kept in a compact form along with the embedded bit-stream until all code-blocks have been compressed," page 1161, column 1);

wherein the portions to be deleted are determined based on said index parameter ("a bit-stream generated by concatenating the suitably truncated representations of each code-block, B_i, including sufficient auxiliary information to identify the truncation points, n_i, and the corresponding lengths," page 1159, column 1).

8. Claims 15-17 rejected under 35 U.S.C. 102(b) as being anticipated by Zandi *et al.* US 5867602 ("Reversible wavelet transform and embedded codestream manipulation").

Regarding Claim 15, Zandi discloses a method of processing audio information ("The input data may comprise a variety of data types, such as image (still or video), audio, etc.," column 6, line 62), comprising the steps of encoding said audio information by a portion ("In one embodiment, the embedded order used for binary values within a coefficient is by bit-plane," column 19, line 45);

generating index parameter indexing degradation of said audio information caused by deletion of one or more portions of said audio information ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients. There is a direct relationship between coefficient depth and pixel depth. Markers or pointers can denote the desired truncation point," column 41, line 28);

compressing said audio information by deleting the portions ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients," column 41, line 28); and

attaching said index parameter to the encoded audio information ("A simple solution is to record at encode time (or a later parsing time) the number of coded bits that each importance level contributes to the codestream for each coding unit or globally, or both," column 42, line 4);

wherein the portions to be deleted are determined based on said index parameter ("The header contains an importance level and its corresponding number of bits," column 42, line 9).

Regarding Claim 16, Zandi discloses an audio processing apparatus ("The input data may comprise a variety of data types, such as image (still or video), audio, etc.," column 6, line 62; "In the present invention, elements of the encoding portion and/or the decoding portion may be implemented in hardware or software, such as that used on a computer system," column 7, line 1. Also consult figures 10, 11, 19A, and 19B),

comprising:

an encoding unit that encodes audio information by a portion ("In one embodiment, the embedded order used for binary values within a coefficient is by bit-plane," column 19, line 45) . Also consult figures 19A and 19B);

an index generating unit that generates index parameter indexing degradation of said audio information caused by deletion of one or more portions of said audio information ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients. There is a direct relationship between coefficient depth and pixel depth. Markers or pointers can denote the desired truncation point," column 41, line 28. Also consult figures 19A, 19B. and 35);

a compressing unit that compresses said audio information by deleting the portions ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients," column 41, line 28. Also consult figures 19A, 19B, and 35); and

an index attaching unit that attaches said index parameter to the encoded audio information ("A simple solution is to record at encode time (or a later parsing time) the number of coded bits that each importance level contributes to the codestream for each coding unit or globally, or both," column 42, line 4);

wherein the portions to be deleted are determined based on said index parameter ("The header contains an importance level and its corresponding number of bits," column 42, line 9).

Regarding Claim 17, Zandi discloses a computer program that causes a computer to process audio information ("The input data may comprise a variety of data types, such as image (still or video), audio, etc.," column 6, line 62; "In the present invention, elements of the encoding portion and/or the decoding portion may be implemented in hardware or software, such as that used on a computer system," column 7, line 1. Also consult figures 13-15), comprising the steps of:

encoding said audio information by a portion ("In one embodiment, the embedded order used for binary values within a coefficient is by bit-plane," column 19, line 45 . Also consult figures 13-15);

generating index parameter indexing degradation of said audio information caused by deletion of one or more portions of said audio information ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients. There is a direct relationship between coefficient depth and pixel depth. Markers or pointers can denote the desired truncation point," column 41, line 28. Also consult figures 19A, 19B. and 35);

compressing said audio information by deleting the portions ("Each coding unit is truncated at the point at the right number of bit-planes and the transform is performed on the quantized coefficients," column 41, line 28. Also consult figures 13-15);

attaching said index parameter to the encoded audio information ("A simple solution is to record at encode time (or a later parsing time) the number of coded bits that each importance level contributes to the codestream for each coding unit or globally, or both," column 42, line 4); and

wherein the portions to be deleted are determined based on said index parameter ("The header contains an importance level and its corresponding number of bits," column 42, line 9).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Taubman as applied to claim 1 above, and JPEG2000 Part I Final Committee Draft Version 1.0 (11 April, 2000. Supplied by applicant).

Regarding Claim 8, Taubman discloses compressing images using bit plane truncation and attaching index parameters to the encoded image. Taubman does not explicitly disclose storing index parameter in a comment marker of the encoded image. Final Committee Draft teaches informational markers such that the generated index parameter is stored in a comment marker of the encoded image information (Consult "Comment and extension (CME)," page 51, where it indicates that "these markers segments might assist a parser or decoder.").

It would have been obvious at the time the invention was made to one of ordinary skill in the art to apply Final Committee Draft's method of storing decoding-related

information in comment and extension marker to Taubman's image compression using bit plane truncation technique as an efficient method of storing information necessary for image decoding.

Regarding Claim 9, the combination Taubman-Final Committee Draft teaches the method as claimed in claim 8, wherein said comment marker is provided in a main header or a tile part header of the encoded image information ("Usage: Repeatable as many times as desired in either or both the main or tile-part headers," page 51 of Final Committee Draft).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farras Abdelnour whose telephone number is 571-270-1806. The examiner can normally be reached on Mon. - Thurs. 7:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Farras Abdelnour
Examiner
Art Unit 2624

FA

WENPENG CHEN
PRIMARY EXAMINER

12/4/07